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Measurements of Emotional Attributional Biases : A Confirmatory Study of Infrahumanization

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Abstract

This study asks if infrahumanization a detectable individual trait, and how empathy and emotional literacy predict infrahumanization or emotional bias between groups. Black and white participants did not systematically attribute more distinctly human emotions to characters of different races in a series of vignettes, nor did cognitive empathy, empathic capacity, or anti-social personality traits predict a difference in emotional bias.

MONTCLAIR STATE UNIVERSITY

Measurements of Emotional Attributional Biases:

A Confirmatory Study of Infrahumanization

by

Courtney Tobin

A Master's thesis Submitted to the Faculty of

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Measurements of Emotional Attributional Biases:

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Literature Review

Humans have been preoccupied with what makes us human at least since we have been writing down our ideas, from Genesis to Aristotle and beyond. But with this distinction of humanity comes a darker question: do all humans have humanity? Are some more human than others? As far back as the mid-19th century, the word *dehumanization* has been used to explain this phenomenon (Dehumanize, 2015).

The Oxford English Dictionary defines 'dehumanize' as a transitive verb which means, "to deprive of human character or attributes" (Dehumanize, 2015). The American Psychological association focuses on the noun form, 'dehumanization,' when it defines the concept as, "any process or practice that is thought to reduce human beings to the level of mechanisms or nonhuman animals, especially by denying them autonomy, individuality, and a sense of dignity" (VandenBos & American Psychological Association, 2015). In other words, humans sometimes see other human beings as nonhuman animals, and use this worldview to explain away atrocities visited upon them.

No wonder psychologists have put so much effort into explaining the phenomenon. According to Haslam (2013), current theories of dehumanization may be organized on three dimensions: (1) the antithesis of humanity, (2) the subtlety or explicitness of the dehumanization, and (3) the degree of the dehumanization, and whether it is relative or absolute. The first dimension explains what humans are seen *as*, if not humans: either they will be likened to animals, or to objects. The second dimension explains how that dehumanization is expressed: are people outright saying that another group is ape-like, or are they simply not hiring them because they don't think they're capable of human levels or cognition and responsibility? The third dimension shows how much a group is dehumanized. Are out-group members somewhat human, or human-like, and can they be perceived as more or less human

based upon their appearance or actions; or are all members of the out-group not human, no matter how they present themselves (Haslam, 2013)?

This three-dimensional framework transcends other organizations of dehumanization, such as whether it is based on race or nationality, or how it is applied politically and socially, and ties together sometimes disparate examples of dehumanization (Haslam, 2013). Interdisciplinary studies of dehumanization often identify very similar formulas of dehumanization with very different outcomes: for example, the Jim Crow South used African Americans as an economic tool to be exploited by whites, whereas Nazi Germany saw the Jewish people – and millions of other "undesirables" – as a problem to be exterminated. However, American Jews have historically been very keen to point out the parallels between the plights of African Americans in America vs. the Jewish people in Germany (Floyd-Thomas, 2014). In both cases, white Christians saw their out-group as animals – African Americans were generally referred to as apes, whereas Jews were called vermin – were very explicit in their dehumanization of the other group, and used an absolute formulation (Haslam, 2013). This framework allows us to view these instances of dehumanization similarly, despite the major differences between them.

The framework also allows us to study dehumanization in a society where such ideas are often frowned upon, and in which people often try to hide their prejudices. Subtle or implicit forms of dehumanization may be studied alongside and contrasted against blatant forms of the phenomenon within the same theoretical framework (Kteily et al., 2015).

Infrahumanization

In 2000, Leyens et al. published research on a newly recognized phenomenon: *infrahumanization*. According to the researchers, infrahumanization occurs when members of an in-group do not realize the members of an out-group's ability to possess or display emotions which are deemed uniquely human. By describing the out-group as only experiencing those

emotions that are universal to humans and animals, people categorize their in-group as having more human emotional reactions than people in the out-group. This is a judgement of the out-group's humanity: if they do not have human emotional reactions, they are by definition less human than the in-group (Leyens et al., 2000). This initial research has expanded to cover varied instances of intergroup bias, and covers issues of race, ethnicity and nationality.

This is a subset of dehumanization. According to Haslam's (2013) organization of the field, it contrasts humans with animals, as the out-group is seen as having emotions, but only those emotions which are present in animals as well as humans. Additionally, it is a subtle form of dehumanization, and has a relative framework, in which some out-groups may be more human (or less dehumanized) than others.

Studies have found that infrahumanization occurs most often with groups who are highly relevant to each other, and particularly those who compete for resources. For example, in the original study, mainland Spaniards were asked to judge the emotions of people from the Canary Islands as a group. The islanders were considered as lower-status citizens with whom the Spaniards competed for jobs. When the Spaniards ascribed fewer secondary emotions to them in the study, it was an implicit sign of bias against the islanders, and the judgment that they were less human than the Spaniards (Leyens et al., 2000). Other researchers have found that less infrahumanization is exhibited toward people who are unfamiliar to the in-group, likely because there is less reason to dehumanize a group with which there is no competition or other relevant interest (Cortes et al., 2005). Furthermore, a third study found that French and German citizens, who have low conflict and relatively equal, high statuses in the world, tended to have low levels of infrahumanization, despite their very different nationalities and languages (Rohmann et al., 2009).

This phenomenon seems to happen both when judging the overall attributes of the out-group and in-group (as in Leyens et al., 2000; Rohmann et al., 2009), and when judging individuals who happen to be in either the in- or out-group. For example, in Cuddy, Rock & Norton's (2007) study, experiment participants exhibited infrahumanization toward just one person. In the study, participants were asked to read a fictitious article featuring a woman who lost her child during Hurricane Katrina, and then asked how strongly the mother felt certain primary and secondary emotions. The experimenters manipulated the in-group and out-group by indicating the mother's race using a stereotypically black or white name, and had participants of multiple races. In their analysis, they found that both minority and white participants tended to attribute more secondary emotions to their own race, though the tendency for infrahumanization was much more pronounced for minority subjects than for white (Cuddy, Rock & Norton, 2007). The weakness of this experiment, of course, is that it was a between-subjects design, and therefore could not capture individual differences in understanding of and attribution of secondary emotions.

Of course, this type of prejudice may be problematic in individual settings as well as when judgements are made between large, generic groups. Particularly, Vaes et al. (2003) expanded the study of infrahumanization by looking at how subjects reacted when members of the outgroup display secondary, or uniquely human emotions. They found that when people complained, subjects would express more solidarity with those in the out-group who used primary emotions than those who used secondary emotions in their complaint. This implied that the subjects exhibited less empathy for out-group members who expressed secondary emotions than for either those who expressed only primary emotions, or for members of their own in-group (Vaes et al., 2003).

Additionally, infrahumanization does not seem to be static, but something that may be changed through interventions. Past research has shown that racial bias itself is somewhat mutable, and may be increased or decreased in individuals. This was classically shown when dealing with more explicit out-group prejudice in the Robbers Cave Experiment (Sherif, Harvey, White, Hood, & Sherif, 1961), but has recently been proven to work with implicit prejudice as well. Hall, Crisp & Suen (2009) were able to show that encouraging perceptions of overlap between two groups by having participants ruminate on and list characteristics that they shared with an out-group lowered implicit prejudice toward the out-group.

With regards to infrahumanization, researchers found that when the differences between French and German citizens were emphasized – that is, when people ruminated on their nationalism – they exhibited higher levels of infrahumanization toward each other. When they were then asked to ruminate on their shared European Union membership, infrahumanization lowered again (Rohmann et al., 2009). This suggests that infrahumanization may be exhibited at different levels between individuals, or that infrahumanization may be studied as an individual trait, instead of at the group-level, as it has been in much of the literature.

Basic and Complex Emotions: What are They?

The basis of infrahumanization is the difference between Basic or Primary Emotions and Complex or Secondary Emotions. Simply put, primary emotions are those that are universal to all mammals (such as fear or happiness), whereas secondary emotions are more complex emotions which are unique to humans (such as guilt or nostalgia) (Leyens et al., 2000). This categorization is sometimes controversial, mainly because a comprehensive list of primary emotions is impossible to compose.

Constructionalist Theories of Emotional Experience

Many researchers have questioned whether or not some emotions are actually universal, and that the assumption of basic and non-basic emotions may not be as empirically evident as some researchers suggest. Constructionalists have argued that emotions are not actually distinct, but constructed by the individual's experience of combinations of physiological processes, or instances of core affect (Russell, 2003; Russell, 2009; Barrett, 2011). According to these theories, there are no distinct basic emotions. Instead, there are physiological responses which may be present for many emotions, but which in combination create our emotional experiences.

Constructionalists start with the question: what is an emotion? To answer the philosophical nature of this question, Barrett (2006) argued that if basic emotions are all of a specific category – a *natural-kind* in philosophical parlance – then they should share characteristics. Instead, what makes them basic according to biological theorists is that they have *distinct* characteristics: distinct facial expressions, distinct stimuli, distinct physiology, etc. However, they cannot be categorized based on their distinctness from one another or from other emotions, because even that is not exact: anger and panic may both increase heart rate, and a scowl may indicate anger or disgust. Indeed, these emotions may be in themselves the assumptions, constructs that we expect to find as opposed to distinct biological impulses – and this may be the reason why categorizing *basic* emotions are so difficult. When the theory precedes the data, it is usually difficult to make the data fit (Barrett, 2006).

Although this seems like mainly a philosophical difference in categorical definitions, it leads to an interesting new approach. Instead of using pre-defined emotional constructs, such as anger, Barrett and other constructionists suggests looking at physiological outputs first, and as empiricists using that data to define what she calls "core affect." Like basic emotions, core affect is a category of responses which are present in all mammals, and which are instinctive to

humans (Barrett, 2006). A constructionist approach been developed in recent years which theorized a core affective system: a dual-axis matrix of neurobiological states, which are organized on Activation/Deactivation and Pleasant/Unpleasant continuums (Russell, 2003; Barrett, 2011).

According to a newer model which has come from this research, the Conceptual Act Model, any given emotion may fluctuate upon these continuums, depending on the stimuli, but they are identified by the physiological instances of core affect that they induce (Barrett, 2011). This flows from the theoretical understanding that there are several ways to be angry, for example, but they all trigger a collection of specific responses, and we need only to recognize some of these responses in order to automatically categorize into anger.

Appraisal Theory of Emotions

There are also researchers who eschew biology and evolution as the theoretical foundations of emotion, and instead argue that cognitive processes should be focused on instead. These researchers attest that emotions are the results of cognitive processes by which an appraisal is made based on a specific stimulus. They call these processes *episodes*, and categorize emotions based on the cognitive and physiological output of the episode. Some appraisalists categorize these episodes as the emotions we are more familiar with (love, fear, anger), whereas others look at emotional components, such as a flight or fight response (Moors, 2014).

Proponents of appraisal theory offer critiques of both biological theories of basic emotions and of constructionism. For one, basic emotion and constructionism theories both attest that emotions are byproducts of biology – that is, a stimulus creates a physiological or neurological response, which the individual then cognitively understands as an emotion. Their biggest quarrel is whether the responses (emotions) are distinct or not, and how to categorize

the physiological responses. Appraisal theory, on the other hand, is based upon the idea that appraisals, or cognitive processes, cause the biological emotional response (Moors, 2013).

Proponents of appraisal theory offer critiques of both biological theories of basic emotions and of constructionism. For example, the two-dimensional matrix of arousal and pleasantness of constructionism is too simplistic for appraisal theory. As far back as 1985, researchers have been decrying arousal and pleasantness as too confining for a theory of emotions, giving several possibly supplementary scales in their research (Smith & Ellsworth, 1985). More recently, researchers have added a third continuum of unpredictability to account for these changes (Fontaine, Scherer, Roesch & Ellsworth, 2007) – which of course ties into how well a stimulus may be appraised before a reaction is made. No matter what dimensions are added, though, it seems that the constructionist theoretical underpinnings of emotion are too simple for an appraisal theory of emotions.

More importantly for our understanding, the appraisal theory's view of emotions does not leave much room for the distinction between basic and complex emotions. Like the constructionist view, the difference in emotional complexity is a *valence* issue: emotions may require more or less cognitive input in order to be understood, but at the end of the day, all emotions involve cognitive events (appraisals), and therefore there is no distinguishing line between basic and complex emotions.

Emotional Heuristics and Infrahumanization

Truthfully, we may never create a definitive model of basic emotions across cultural and lingual differences (Smith & Schneider, 2009; Barrett, 2006). However, the phenomenon of infrahumanization is still being recognized in research. How is that?

In actuality, a definitive emotional model is not necessarily a detriment to researching the effects of basic and complex emotions in individuals. Even while some researchers have had

trouble creating a universal taxonomy of emotions, they realize that humans by nature tend to lump emotions into categories of "basic" and "non-basic" even with evidence on their side (Barrett, 2006). Russell (2003) admitted that "The concepts of emotion, fear, anger, and so forth are parts of a folk theory inherited from human shepherding and farming ancestors. These concepts have long provided predictions and understanding and are now a part of common sense." There's a deeply held belief among most people that emotions are easily categorized. Additionally, almost all the research on emotions have focused on what a layman may call a "simple" emotion: a basic emotion that we believe all people possess, no matter what their culture of level of cognitive and emotional intelligence. Researchers may be concentrating on scowls and smiles, or the physiological processes that combine as a fight of flight response, but the layman simply understands it as research on anger, or happiness, or fear.

Other researchers have found that individuals create their own taxonomy, and that simple and complex emotions tend to overlap between subjects (Demoulin et al., 2004). Further research on emotional categorization suggests that people categorize emotions naturally, as this is a useful heuristic to use in everyday life (Rodríguez-Torres, 2005).

It seems as though people categorize emotions as uniquely human (secondary) or universal (primary) whether or not there is a biological factor to the emotions themselves. This is particularly important for infrahumanization, as bias is rarely about how the world is, but how the world is perceived.

Emotional Literacy

As a result of Demoulin et al. (2004) and Rodríguez-Torres's (2005), we propose that *emotional literacy* is an important part of infrahumanization. Emotional literacy here refers to individuals' understanding of the definitions of emotions, their personal experience with these emotions, and their rating of the complexity of emotions.

Most likely, a high rate of emotional literacy will lead to high infrahumanization – that is, if people understand the definitions of emotions, and agree with the normative categorizations of complex (secondary) and simple (primary) emotions, they will exhibit infrahumanization toward out-group members. However, if they do not understand the emotions or are unable to rate their complexity, it would undermine testing for infrahumanization. Furthermore, if they have a non-normative view of the complexity of emotions (for example, rating guilt as a simple emotion and rage as complex), they may exhibit infrahumanization within their emotional heuristic, even if it does not conform to other subjects' views of complex and simple emotions. In other words, if they believe that guilt is a simple emotion when most subjects view it as complex, and they then ascribe guilt to the out-group at a high rate, they are still using infrahumanization to exhibit bias. This allows us to control for individual differences when testing for infrahumanization.

To our knowledge, this has not been studied as part of infrahumanization before. Generally, researchers use the difference of *emotion* and *sentiments* in romance languages, which generally separate primary and secondary emotions, respectively (as in Leyens et al., 2000; Rohmann et al., 2009). In English, researchers tend to use a pilot study in which subjects rate the complexity of emotions, from which the results are used to categorize primary and secondary emotions in subsequent studies (as in Cuddy, Rock & Norton, 2007). Although both of these methods may yield a list of primary and secondary emotions which generally apply to subjects of similar language and background, they do not account for individual differences, and may not show realistic results for a heterogeneous subject pool.

Empathy

Additionally, one of the ways infrahumanization effects intergroup relations is by changing or decreasing the way people show empathy toward members of the out-group (Vaes

et al., 2003). Again, this study showed how people reacted when an out-group member complained when attributing simple or complex emotions to themselves. However, this slim research does not clearly indicate whether or not an individual person's capacity for empathy effects their predisposition toward infrahumanization, only whether or not people as a group show less empathy as a result of infrahumanization.

For the past several decades, researchers have recognized empathy as a multifaceted construct. Davis (1983) first measured empathy as combination of a *cognitive* dimension and an *affective* dimension. In his original research, cognitive empathy was a combination of perspective taking (thinking through others' situations to understand their emotions) and fantasy (putting oneself into a situation and thinking through the emotional repercussions of those situations). Affective empathy, on the other hand, is composed of empathic concern (feeling "other-oriented" emotions such as sympathy and concern) and personal distress (feeling personally uncomfortable in situations that are emotionally stressful for others) (Davis, 1983). Although these four original scales have grown into the two distinct categories of cognitive and affective empathy, much of the current research is still based very heavily on this model of empathy.

The cognitive aspect of empathy, particularly, may be important in understanding how people ascribe emotional responses to others. Ickes (1993) discussed the difference between "affective sensitivity" and "empathic accuracy" as the ability to simply infer emotional states, as opposed to the "ability to accurately infer the specific content of another person's thoughts and feelings." That is, affective sensitivity, is feeling oriented, and mirrors Davis' (1983) affective empathy, whereas empathic accuracy allows one to understand and ascribe exact emotions to another person based on contextual knowledge. Ickles did several studies which explored people's capacity for empathic accuracy, comparing them to self-report tools such as Davis's

(1983), finding that people often do not know how accurate their empathic accuracy, or cognitive empathy is, but also showing that this inferential, cognitive dimension is important to empathy. As a result, this research helped create a framework for cognitive empathy as it's currently understood and studied.

Currently, cognitive empathy has been crystalized as the facet of empathy which requires a cognitive component, or the ability to think through and understand what another person is feeling (Teding van Berkhout & Malouff, 2016). It is related to affective empathy, at least as people experience it (Kerem, Fishman, & Josselson, 2001), but perspective taking and understanding others' emotions are still studied as part of the cognitive component of the greater phenomenon (Vachon & Lynam, 2016).

Behaviors correlated to empathy are not always as clear-cut as laypeople would believe. A meta-analysis recently showed that empathy is not a reliable predictor of aggression in psychological studies (Vachon, Lynam, & Johnson, 2014). The authors hypothesize that either the link between aggression and empathy may not exist, or that there may be measurement issues in the studies used for their meta-analysis. Although they have gone on to test a new tool for measuring empathy (Vachon & Lynam, 2016), there is as of yet no research to refute the findings of their meta-analysis.

Likewise, there is little proof of capacity for or use of empathy as an individual trait being related to racism. Myriad studies have shown that increasing empathic concern may decrease prejudice in study participants (such as Clore & Jeffery, 1972; Zembylas , 2012; Shih, Stotzer & Gutiérrez, 2013). However, little, if anything, has been studied to show that a person's general level of empathy – either empathic capacity or the use of empathy – may predict racial bias. It is not clear if that is because there is no link between empathy and race, or because no within-subject designed studies have looked into the relationship between race and empathy. In

any case, the possibility of individual empathy relating to implicit racism is particularly intriguing for infrahumanization, which is a form of racial bias which revolves around understanding the emotional states of others.

Since infrahumanization is based on ascription of others emotions, it would be logical that people with higher capacity for perspective taking, or cognitive empathy more generally, would also be more able to ascribe complex emotions to others in various situations. If this is true, these people may show more infrahumanization, because they would be more likely to be able to ascribe a high level of secondary emotions to their in-group. However, emotional bias against the out-group would theoretically prevent them from using those skills when evaluating them.

To our knowledge, this theory has not yet been tested in the literature. Part of this research study would be to test this theory, and expand upon it in subsequent studies if a difference is found.

Hypotheses

For this experiment, we aim to exhibit infrahumanization, and to discover if people with higher cognitive empathy scores, and who have emotional literacy for more complex emotions will exhibit more infrahumanization toward out-groups than those with lower empathy and emotional literacy scores. Our hypotheses are:

1. Infrahumanization will be displayed at the individual level when subjects are asked to identify the emotions of several people of different races.
2. People with empathic capacity, and specifically high cognitive empathy will also show high instances of infrahumanization, because they will use that empathy more on those of the in-group than those of the out-group.

3. Infrahumanization is a phenomenon that happens only when assessing people in their out-group, and therefore should not be generally correlated with the anti-social behaviors tested in the Dark Triad of Personality: Machiavellianism, Narcissism, and Psychopathy.

If these hypotheses are supported by our research, we believe we will have shown that not only is the phenomenon of infrahumanization measurable in individuals, but that it is correlated to other intersections of racial bias and emotion in current psychological literature.

Methodology

Pilot

Pilot Methodology

For the pilot, we had 69 Montclair State University undergraduate students participate in an online survey for psychology class credit. We asked them first to rate all of our emotions on a 1 to 5 scale for emotional complexity, where 1 rated a simple emotion, and 5 rated a complex one. We also had them read each of our 8 vignettes, which had been stripped of names and ethnic connotations. They were asked to choose up to 5 emotions which the protagonist would be feeling in each one, and then to rate on a five point scale how intense the emotional response to the situation would be, and how complex the situation was. We added these last two questions in order to test for any differences in the vignettes which may change their balance once they were assigned to racial groups in the larger study.

Pilot Analysis

To analyze emotions, mean complexity scores and standard deviation of each emotion over all participants was calculated, as shown in Table 1.

Table 1.

Emotion	Average Complexity	Standard Deviation	Emotion (Continued)	Average Complexity	Standard Deviation
Resentful	3.52	1.09	Dismay	2.93	0.99
Hope	3.42	1.29	Intrigued	2.93	1.03
Attraction	3.39	1.25	Optimism	2.93	1.13
Dispirited	3.38	1.20	Indignant	2.91	1.03
Nostalgia	3.30	1.23	Horrified	2.87	1.22
Shame	3.28	1.30	Irritated	2.80	1.20
Melancholy	3.13	1.24	Terrified	2.78	1.17
Betrayed	3.13	1.24	Elation	2.72	1.01
Nervous	3.13	1.40	Panicked	2.72	1.17
Jealous	3.09	1.54	Disappointment	2.70	1.33
Sadness	3.07	1.55	Baffled	2.65	0.94
Distress	3.06	1.24	Embarrassed	2.62	1.36
Guilty	3.06	1.38	Disgusted	2.59	1.25
Resignation	3.06	1.26	Excitement	2.55	1.40
Sorrow	3.04	1.23	Eager	2.51	1.02
Tenderness	3.04	1.17	Impatient	2.50	1.06
Anger	3.03	1.47	Alarmed	2.46	1.18
Affectionate	3.01	1.31	Happy	2.45	1.52
Worried	3.00	1.20	Surprised	2.30	1.10
Sympathy	2.99	1.23	Playful	2.13	1.14

Scores of all 40 emotions were collapsed to show the full range of scores between emotions, as summarized in Table 2.

Table 2.

	Count	Mean Avg. Complexity	Minimum Avg. Complexity	Maximum Avg. Complexity	Standard Deviation
All Emotions	40	2.9	2.13	3.52	0.319

To ensure analysis of only relevant emotions, the researchers counted the number of times each emotion was used to describe the protagonists' feelings, and all emotions that were

chosen less than 16 times (that is, less than twice per vignette on average across all 69 participants) were discounted from the study. These emotions were: Attraction, Nostalgia, Jealous, Optimism, Elation, Excitement, Happy, and Playful.

Of the remaining 32 emotions, we then identified those in the top quartile of average complexity ratings,: Resentful, Hope, Dispirited, Shame, Melancholy, Betrayed, Nervous, and Sadness.

For each vignette, the complex and simple emotions were counted. Table 3 shows these counts, as well as the average Emotional Complexity Score, and the overall intensity and complexity participants assigned to the vignettes.

Table 3.

Vignette (Pair)	# Complex Emotions	# Simple Emotions	Emotional Complexity Rating	Vignette Intensity Score	Vignette Complexity Score
Vignette 1 (A)	105	52	2.96	4.29	3.81
Vignette 2 (B)	75	68	2.93	3.39	3.16
Vignette 3 (B)	89	103	2.93	3.19	3.07
Vignette 4 (A)	108	29	2.99	4.51	4.57
Vignette 5	42	111	2.83	3.78	3.72
Vignette 6	138	69	3.02	3.30	2.70
Vignette 7 (C)	50	90	2.87	3.52	3.00
Vignette 8 (C)	55	95	2.84	4.32	4.06

Pilot Discussion

Since infrahumanization is based on the assignment of complex emotions to others, the count of complex emotions was used to choose how vignettes would be assigned in the experiment. Two vignettes – Vignettes 5 & 6 – were outliers, with extremely low and extremely high counts, respectively. The other vignettes paired off well, with Pairing A having 105 & 108 complex emotions assigned; Pairing B having 75 & 89 assigned; and Pairing C having 50 & 55 assigned. For each of these pairings, one character would be assigned a prototypically black

name, and one would be assigned a white name. If infrahumanization is not shown, these pairs will continue to match in the experiment as well as the pilot.

Experiment

Subjects

We invited undergraduate students from a public university to engage in this within-subjects designed experiment. Sign-ups were opened in short periods, over the summer and fall of 2016. After each sign-up period, total counts of participants were checked. Once the total exceeded 100, sign ups were closed and analysis was begun.

Of the 153 participants who completed it, 14 were African American/black, 79 were white, and the remaining 60 were of other or multiple races or ethnicities. The third group did not read vignettes which featured characters of their own race, and we were therefore unable to test whether or not they were displaying infrahumanization, but their data was used in the Emotional Literacy portion of the analysis. This gave us a total of 93 white and African American/black participants whose data was used for the entire study. Table 4 shows the breakdown of all participants by race and gender.

Table 4.

Participants	**Female**	**Male**	**Grand Total**
African American or Black	13	1	14
White	64	15	79
American Indian or Alaska Native	1	0	1
Asian	6	0	6
Hispanic	30	4	34
Other	4	1	5
Two or more races	13	1	14
Total	**131**	**22**	**153**

Measures

We created a within-subjects experiment to test for infrahumanization using a series of vignettes. We also used a battery of other tests to find what traits correlate with the use of

infrahumanization, and therefore what traits may predict that infrahumanization will be used by an individual.

Emotional Literacy

In order to rate emotional literacy, subjects were asked questions about various emotions, in which they (a) rated them as positive, negative or neutral, (b) rated their complexity on a scale of 1 to 5, and (c) rated how often they've experienced this emotion, if ever.

Vignettes

We then conducted an experiment to see if we could find evidence of infrahumanization. We used Cuddy, Rock & Norton's (2007) experimental design using vignettes as a basis, but with an updated design to allow for a within-subjects analysis. We had each participant read a series of six vignettes about white people and people of color in emotional situations – specifically, the race of the vignette main character was the independent variable, which could be either the in-group or out-group race of the participant. Vignettes subject areas were all negative, as they seem to induce the most extreme emotions, and included themes such as unplanned pregnancy, becoming the victim of a crime, arrest and suicide. Using the pilot, these vignettes were paired so that the emotional complexity of both ingroup and outgroup vignettes were equal. Participants were told the race of each character using prototypically black or white names, which were chosen based off Conaway & Bethune's (2015) analysis of names based on race.

Participants were then asked to indicate how the main character of each vignette felt by choosing up to five emotions from a standard list. The number of complex emotions chosen was

the dependent variable, and was expected to vary depending on whether the vignette subject is in the in-group or out-group of the study participants.

Empathy Tests: Reading the Mind in the Eyes & the Basic Empathy Scale

The Reading the Mind in the Eyes – Revised Version is a measurements of empathic capacity, created in 2001 (Baron-Cohrn, Wheelwright, Hill, Raste & Plumb, 2001). This test asks participants to look at a set of eyes, and then choose one of 4 emotions to correspond to the expression in the eyes. It tests affective empathy, or the basic recognition of emotion in others, not cognitive empathy, and therefore could not be used alone for this research. However, we asked participants to take it because the *capacity* for empathy should be inherent to the ability to infrahumanize others, as stated in the second hypothesis.

Additionally, the Basic Empathy Scale in Adults (BES-A) is a self-report tool which tests whether or not adults tend to use empathy, with separate subscales for cognitive and affective factors (Carré, Stefaniak, D'Ambrosio, Bensalah & Besche-Richard, 2013). We used this test to find individuals' tendency toward cognitive and affective empathy.

Depending on whether infrahumanization was seen in the main hypothesis, a comparison of these scores to infrahumanization scores was planned to support the second hypothesis. According to this hypothesis, subjects with high scores on the Reading the Mind in the Eyes test and the BES will also have higher infrahumanization scores.

Dark Triad

Since infrahumanization is hypothesized as only relating to out-group assessments, it should not be related to anti-social personalities or behaviors generally. We used the D3-Short version of Paulhus's Dark Triad of Personality Test to test participants for Machiavellianism, narcissism, and psychopathy (Paulhus & Jones, 2011). Participants will be asked to read 27 questions, and will then be asked to rate on a scale of 1 to 5 whether they agree with them.

These scores are then added together on three scales, each of which shows one of the three anti-social personality traits. For example, participants were asked if they agree with the statement, “I like to pick on losers,” ask part of the test for psychopathy, with higher rated responses indicating a higher level of this trait, and if they agree with, “Make sure your plans benefit you, not others,” in order to test their level of Machiavellianism.

The third and final hypothesis states that, “Infrahumanization is a phenomenon that happens only when assessing people in their out-group, and therefore should not be generally correlated with the anti-social behaviors tested in the Dark Triad of Personality: Machiavellianism, Narcissism, and Psychopathy.” These test scores on all three factors were be compared to infrahumanization scores in order to see whether or not infrahumanization is correlated with these anti-social personality traits.

Results

Emotional Ratings

For the analysis, we first looked at the Emotional Literacy scores for complexity in order to check to see if participants rated emotions substantially different than the majority group. Each individual emotion was looked at to find a norm – however, no norms were found. Table 5 (next page) shows the count of scores for each emotion, as well as the average, minimum, maximum and standard deviation for each one. We also looked at each individual participant in order to see if they were assigning a range of complexity to emotions, in order to ascertain if they were reading each prompt before answering. We found that all participants showed a broad range of emotions, and therefore no participants should be dismissed. Although not hypothesized, this anecdotally fits prior research which suggests that concepts of basic and secondary emotions are not universal norms.

Next, we checked ratings of positivity and negativity of each emotion. Again, there was a far greater range of responses than expected, but several emotions were either universally rated as positive (such as affectionate and hope) or universally negative (such as anger and shame). Table 6 (page 23) shows the ratings of each emotion on this negative/positive scale.

Although some of these scores show clear outliers (the 1 participant who rated affectionate as negative, or the 1 who rated anger as positive, for example), we decided that one deviation should not indicate a lack of understanding of the emotions provided. We checked each participant to see if they deviated from these norms regularly. In this test, no participant deviated from the norm more than 4 times over the course of rating 40 emotions, and so we did not remove any participants based on a non-normative understanding of these emotions.

Table 5.

Emotion	**1**	**2**	**3**	**4**	**5**	**Mean**	**Minimum**	**Maximum**	**St. Dev.**
Affectionate	24	26	37	38	27	3.12	1	5	1.32
Alarmed	40	37	48	23	4	2.43	1	5	1.11
Anger	37	38	33	22	22	2.70	1	5	1.36
Attraction	16	21	42	39	34	3.36	1	5	1.26
Baffled	19	37	57	28	6	2.76	1	5	1.03
Betrayed	28	14	27	48	35	3.32	1	5	1.40
Disappointment	21	28	49	30	22	3.03	1	5	1.24
Disgusted	36	31	41	27	15	2.69	1	5	1.29
Dismay	23	34	50	34	8	2.80	1	5	1.12
Dispirited	24	26	48	34	20	3.00	1	5	1.25
Distress	22	36	52	32	10	2.82	1	5	1.12
Eager	41	32	57	20	2	2.41	1	5	1.06
Elation	25	36	57	24	9	2.71	1	5	1.10
Embarrassed	28	37	32	32	23	2.90	1	5	1.34
Excitement	64	29	25	17	17	2.30	1	5	1.40
Guilty	31	26	30	31	33	3.06	1	5	1.44
Happy	71	20	21	25	15	2.30	1	5	1.44
Hope	18	21	45	29	37	3.31	1	5	1.31
Horrified	35	29	48	25	13	2.68	1	5	1.24
Impatient	37	39	35	23	18	2.64	1	5	1.31
Indignant	12	27	61	33	18	3.12	1	5	1.09

Emotion	1	2	3	4	5	Mean	Minimum	Maximum	St. Dev.
Intrigued	18	43	48	28	14	2.85	1	5	1.14
Irritated	25	35	46	34	12	2.82	1	5	1.18
Jealous	29	25	40	32	26	3.01	1	5	1.35
Melancholy	12	30	59	29	20	3.10	1	5	1.11
Nervous	29	35	27	35	26	2.96	1	5	1.38
Nostalgia	13	21	44	33	40	3.44	1	5	1.25
Optimism	15	25	43	43	25	3.25	1	5	1.20
Panicked	30	40	39	29	13	2.70	1	5	1.23
Playful	73	26	30	15	8	2.07	1	5	1.24
Resentful	13	22	38	52	27	3.38	1	5	1.18
Resignation	14	30	49	34	24	3.16	1	5	1.19
Sadness	49	31	31	22	19	2.55	1	5	1.39
Shame	22	33	43	36	17	2.95	1	5	1.22
Sorrow	17	40	47	22	24	2.97	1	5	1.23
Surprise	50	45	32	19	6	2.25	1	5	1.15
Sympathy	17	30	28	46	31	3.29	1	5	1.30
Tenderness	18	37	51	29	14	2.89	1	5	1.14
Terrified	41	39	43	18	9	2.43	1	5	1.18
Worried	22	30	40	32	28	3.09	1	5	1.31

Vignettes

For the vignettes, we removed all participants who did not identify as either white or African American/black. This allowed us to concentrate only on individuals with both in-group and out-group characters portrayed in the vignettes.

Individual Heuristics Vignette Analysis

Since we had access to our participants' individual emotional complexity ratings, and since we wanted to better understand these individual heuristics, we first coded complex and simple emotions *by individual*, instead of using a master list of emotional categories for the group. We then looked at the emotions ascribed to characters in each vignette, and counted how many emotions that *each participant thought was complex* was ascribed to the characters. If a participant rated an emotion as having a complexity score of 4 or 5 out of 5 in the initial emotional complexity test, we counted that emotion as complex according to the individual.

Table 6.

Emotion	Negative	Neutral	Positive	Emotion (Continued)	Negative	Neutral	Positive
Affectionate	1	13	138	Indignant	63	84	6
Alarmed	46	94	12	Intrigued	6	87	60
Anger	133	18	1	Irritated	132	20	1
Attraction	1	53	98	Jealous	121	30	2
Baffled	31	119	2	Melancholy	62	74	17
Betrayed	145	6	1	Nervous	64	85	4
Disappointment	141	8	3	Nostalgia	64	85	4
Disgusted	140	10	2	Optimism	5	21	127
Dismay	128	22	2	Panicked	117	36	0
Dispirited	132	19	1	Playful	0	18	135
Distress	129	22	2	Resentful	132	18	3
Eager	6	61	85	Resignation	84	66	3
Elation	11	64	78	Sadness	131	21	1
Embarrassed	95	57	1	Shame	139	14	0
Excitement	0	11	142	Sorrow	119	34	0
Guilty	129	22	2	Surprise	1	78	74
Happy	0	5	148	Sympathy	16	80	57
Hope	0	22	130	Tenderness	4	73	75
Horrified	130	22	1	Terrified	132	19	2
Impatient	67	84	1	Worried	102	48	3

Table 7 shows the count of complex emotions for each vignette by both participant race and the race of the characters in the vignettes. The pairs, A-C, denoted next to each vignette indicate the pairing from the pilot study.

In this table, we expected black participants to assign more complex emotions to black characters than white characters, but we actually saw an equal number of emotions assigned between races. We expected white participants to assign more complex emotions to white characters than black, but we actually saw the opposite; white participants assigned 380 complex emotions to black characters, but only 346 to white characters.

Table 7.

	Participant Race	
Vignette (Pair)	**Black**	**White**
Black Character	**79**	**380**
Vignette 1 (A)	*25*	*134*
Vignette 3 (B)	*24*	*121*
Vignette 4 (C)	*30*	*125*
White Character	**79**	**346**
Vignette 2 (A)	*27*	*122*
Vignette 5 (B)	*29*	*114*
Vignette 6 (C)	*23*	*110*

We then took these counts and collapsed them into two frequencies per participant: frequencies of complex emotions chosen in both the ingroup and outgroup groups. The difference between these counts were analyzed to test the first hypothesis: if the in-group was ascribed more complex emotions than the out-group, the larger frequencies would show infrahumanization.

Each participant could choose up to 15 emotions for each the ingroup and outgroup conditions; therefore, the participants could choose anywhere from -15 to +15 more complex emotions for the ingroup condition as compared to the outgroup condition, with higher positive numbers indicating a higher likelihood of bias being shown through infrahumanization. Table 8 shows frequencies for each difference in complex emotions between vignette groups by individual.

In all, 36 participants (38.7%) ascribed more complex emotions to the in-group condition, 36 participants (38.7%) ascribed more complex emotions to the out-group condition, and 21 (22.6%) exhibited no difference between groups.

Table 8.

Increase in Complex Emotions in In-Group Condition	Frequency	Percent
-5	2	2.2%
-4	2	2.2%
-3	9	9.7%
-2	9	9.7%
-1	14	15.1%
0	21	22.6%
1	17	18.3%
2	12	12.9%
3	6	6.5%
4	1	1.1%
Total	93	100%

Pilot List of Emotions Vignette Analysis

Because we had the data from the pilot, which was originally planned as a master list for complex and simple emotions, we did the same analysis using this list instead of individual emotional ratings. Using a small, uniform list of complex emotions - Resentful, Hope, Dispirited, Shame, Melancholy, Betrayed, Nervous, and Sadness – complex emotions were once again counted and organized by the race of the participant and characters, as shown in table 10.

Again, black participants were expected to rate black characters as having more complex emotions, and in this case they did: black participants rated black characters as having 51 complex emotions, as opposed to only 43 for white characters. However, we did not see that white participants rated white characters with more complex emotions; they assigned 233 complex emotions to black characters, but only 229 to white characters.

Table 10.

	Participant Race	
Vignette (Pair)	**Black**	**White**
Black Character	**51**	**233**
Vignette 1 (A)	*24*	*81*
Vignette 3 (B)	*10*	*86*
Vignette 4 (C)	*17*	*66*
White Character	**43**	**229**
Vignette 2 (A)	*22*	*110*
Vignette 5 (B)	*9*	*53*
Vignette 6 (C)	*12*	*66*

We then collapsed these emotion counts as well. Once again, we looked at the difference in complex emotions chosen in all in-group conditions compared to complex emotions chosen in all out-group conditions, expecting that more individuals ascribed more complex emotions to their in-group than to the out-group over the course of all conditions. Table 11 shows the results of this.

Table 11.

Increase in Complex Emotions in In-Group Condition	**Frequency**	**Percent**
-4	2	2.2%
-3	1	1.1%
-2	8	8.6%
-1	19	20.4%
0	17	18.3%
1	15	16.1%
2	19	20.4%
3	8	8.6%
4	3	3.2%
5	1	1.1%
Total	93	100%

Using this list of complex emotions, we found that more participants ascribed a greater number of complex emotions to their in-group than those who ascribed more to the out-group. Here, 30 participants (32.3%) ascribed more complex emotions to the out-group, as opposed to

46 participants (49.5%) who ascribed more complex emotions to their in-group. Another 17 (18.3%) ascribed an equal number of complex emotions to each group.

Empathy Tests: Reading the Mind in the Eyes & the Basic Empathy Scale

In order to analyze how infrahumanization and empathy interact, we planned to use the individual results of the Reading the Mind in the Eyes and the Basic Empathy Scale. Levels of infrahumanization – that is, difference in complex emotions chosen between the ingroup and outgroup conditions of the vignettes – were hypothesized to correlate with empathic capacity in the Mind in the Eyes Test, and with cognitive empathy in the Basic Empathy Scale. Table 13 shows the scores of both tests, including the affective empathy scale of the BES; note that this affective scale was not used in the analysis.

Table 13.

Test	Mean	Minimum	Maximum	St. Dev.
Mind in the Eyes	24.95	14	34	4.12
BES – Affective	27.60	12	55	7.81
BES - Cognitive	22.90	11	45	6.85

Correlation to infrahumanization is tested later in the analysis, as part of a regression analysis.

Dark Triad

We also hypothesized that infrahumanization would not be correlated to anti-social personality traits, as tested by the Dark Triad of Personality test. Table 14 shows the scores for each of these tested traits, along with the same correlation measure as used in Table 13.

Table 14.

Test	Mean	Minimum	Maximum	St. Dev.
Machiavellianism	26.35	14	45	5.57
Narcissism	27.42	11	41	5.39

Psychopathy	35.17	19	45	6.77

We once again deferred our correlation analysis to later in the research, under the Inferential Statistics heading.

Inferential Statistics

We broke our original hypotheses into 3 linked hypotheses in order to analyze the vignettes and other tests together. These were:

H_1: People rate ingroup emotions differently than outgroup emotions.

H_2: People will rate more complex emotions to the ingroup as opposed to the outgroup (infrahumanization).

H_3: Race, gender, empathy and anti-social personality traits, as rated in our other tests, will be predictive of infrahumanization.

The following two sets of analyses test these hypotheses using two sets of complex emotions. In the first case, emotions are rated as complex if the individual in question rated them as complex; again, this allows us to take advantage of understanding individuals' rating through this study. We call this the Individual Heuristic analysis. In the second case, the list of complex emotions identified by the pilot study is used; this is the method used most often in English studies of Infrahumanization, since no authoritative list of emotional complexity exists.

Individual Heuristics of Emotions Analysis

H_1: People rate ingroup emotions differently than outgroup emotions.

For the first hypothesis, we used a repeated measures MANOVA to detect differences between how white participants and black participants were rated simple and complex emotions in in-group and out-group vignette characters. For this, our independent variables were (1) participant race and (2) vignette character race, and our dependent variables were (1) count of simple emotions and (2) count of complex emotions. These independent variables were

treated as repeated measures because each participant selected both within each vignette, and were combined into an "Emotions" factor.

For this analysis, we found no main interaction between Emotions and Participant Race (Wilks' $\Lambda = .992$, $p = .236$), no main interaction between Emotions and Ingroup/Outgroup designation (Wilks' $\Lambda = 1.000$, $p = .859$), and no interaction between Emotions, Participant Race, and Ingroup/Outgroup designation (Wilks' $\Lambda = 1.000$, $p = .973$).

H_2: People will rate more complex emotions to the ingroup as opposed to the outgroup (infrahumanization).

In order to analyze infrahumanization, we used a 2x2 Chi Square model. For this, we counted the number of participants of each race who assigned more complex emotions to characters of each race, as shown in Table 15.

Table 15

	Assigned more Complex Emotions to:	
Participant Race	**Black Characters**	**White Characters**
Black	**7**	**6**
White	**30**	**29**

Here, we once again found no significant difference in how individuals rated in-group and out-group characters, in terms of simple and complex emotions ($x^2 = .038$, $p = .845$).

H_3: Race, gender, empathy and anti-social personality traits, as rated in our other tests, will be predictive of infrahumanization.

We used a linear regression analysis to test whether or not we could predict infrahumanization individuals. Our dependent variable was the difference between complex emotions attributed to the ingroup versus complex emotions attributed to the outgroup by each individual. The frequencies of each of these outcomes are shown in Table 8 above.

Our predictor variables for this regression were (1) race, (2) gender, (3) cognitive empathy score from the BES, (4) empathic capacity from the Mind in the Eyes test, (4) Machiavellianism from the Dark Triad Test, (5) Narcissism from the Dark Triad Test, and (6) Psychopathy from the Dark Triad Test. We hypothesized that cognitive empathy and empathic capacity would be predictive of infrahumanization, and that the Dark Triad traits would not be predicative. Additionally, race and gender were added as post-hoc tests.

No significant regression equations was found ($F(7,85) = .616$, $p = .742$), with an R^2 of .048. Table 16 shows the correlations of all these variables to each other, using Spearman's *rho*.

Table 16.

	Race	Gender	Infrahumanization	Mind in the Eyes	Affective Empathy	Cognitive Empathy	Machiavellianism	Narcissism	Psychopathy
Race	1.000								
Gender	.112	1.000							
Infra-humanization	.019	-.013	1.000						
Mind in the Eyes	-.096	.089	.040	1.000					
Affective Empathy	.019	-.166	-.329*	-.106	1.000				
Cognitive Empathy	.207*	-.025	.093	-.147	.496*	1.000			
Machia-vellianism	-.088	.063	-.109	.080	.016	.056	1.000		
Narcissism	-.319*	.090	-.047	.154	.032	.123	.159	1.000	
Psychopathy	-.174	.151	.115	.266*	-.188	.204*	.349*	.282*	1.000

*Correlation is significant at the 0.05 level.

Pilot List of Emotions Analysis

H_1: People rate ingroup emotions differently than outgroup emotions.

Once again, we used a repeated measures MANOVA to detect differences between how white participants and black participants were rated simple and complex emotions in in-group and out-group vignette characters. However, for this analysis, these categories of simple and complex emotions came from the list we found in the pilot. Our independent variables were (1) participant race and (2) vignette character race, and our dependent variables were (1) count of simple emotions and (2) count of complex emotions. Again, these independent variables were treated as repeated measures because each participant selected both within each vignette, and were combined into an "Emotions" factor.

For this analysis, we again found no interaction between Emotions and Participant Race (Wilks' $\Lambda = .995$, $p = .324$), no interaction between Emotions and Ingroup/Outgroup designation (Wilks' $\Lambda = .994$, $p = .303$), and no interaction between Emotions, Participant Race, and Ingroup/Outgroup designation (Wilks' $\Lambda = .996$, $p = .406$).

H_2: People will rate more complex emotions to the ingroup as opposed to the outgroup (infrahumanization).

In order to analyze infrahumanization, we again used a 2x2 Chi Square model. As in the last analysis, we counted the number of participants of each race who assigned more complex emotions to characters of each race, as shown in Table 17.

Table 17

	Assigned more Complex Emotions to:	
Participant Race	**Black Characters**	**White Characters**
Black	**9**	**4**
White	**27**	**37**

Although more participants did assign more complex emotions to characters of their own race than the other race, this difference was not found to be significant ($x^2 = 2.181$, $p = .140$).

H_3: Race, gender, empathy and anti-social personality traits, as rated in our other tests, will be predictive of infrahumanization.

Finally, we used another linear regression analysis to test whether or not we could predict infrahumanization individuals. Again, our definitions remained the same, with only the categorization of emotions changing. Our dependent variable was the difference between complex emotions attributed to the ingroup versus complex emotions attributed to the outgroup by each individual. The frequencies of each of these outcomes are shown in Table 11 above.

Our predictor variables for this regression were (1) race, (2) gender, (3) cognitive empathy score from the BES, (4) empathic capacity from the Mind in the Eyes test, (4) Machiavellianism from the Dark Triad Test, (5) Narcissism from the Dark Triad Test, and (6) Psychopathy from the Dark Triad Test. We hypothesized that cognitive empathy and empathic capacity would be predictive of infrahumanization, and that the Dark Triad traits would not be predicative. Additionally, race and gender were added as post-hoc tests.

No significant regression equations was found ($F(7,85) = .825$, $p = .569$), with an R^2 of .064. Table 18 shows the correlations of all of these tests, using Spearman's *rho*.

Table 18.

	Race	Gender	Infrahumanization	Mind in the Eyes	Affective Empathy	Cognitive Empathy	Machiavellianism	Narcissism	Psychopathy
Race	1.000								
Gender	.112	1.000							
Infra-humanization	.091	-.131	1.000						
Mind in the Eyes	-.096	.089	.004	1.000					
Affective Empathy	.019	-.166	-.164	-.106	1.000				
Cognitive Empathy	.207*	-.025	.259*	-.147	.496*	1.000			
Machia-vellianism	-.088	.063	-.070	.080	.016	.056	1.000		
Narcissism	-.319*	.090	-.051	.154	.032	.123	.159	1.000	
Psychopathy	-.174	.151	-.090	.266*	-.188	.204*	.349*	.282*	1.000

*Correlation is significant at the 0.05 level.

Discussion

As hypothesized, we expected to find that individuals would tend to display infrahumanization when exposed to a number of situations in which they had to assess the emotional states of people in their in-group or in their out-group. We wrote several vignettes, and paired them by emotional complexity in our pilot study. For each pair, we assigned one to the in-group and one to the out-group for each of our participants.

We further expected that the tendency toward infrahumanization would be correlated to emotional understanding and empathy, and would not be correlated to more general anti-social traits which did not have to do with bias against an out-group. We gave our participants a set of tests which scored their empathy and empathic capacity, as well as the Dark Triad of

Personality Test, and used a regression analysis to see if these scores had any relationship to a participant's tendency toward infrahumanization.

We used two definitions of complex or secondary emotions: (a) emotions that the individual participants listed as complex, and (b) a standard list of emotions identified as complex in our pilot study. Although the latter is standard in the literature, we surmised that the first definition would most accurately show individual instances of infrahumanization.

For both definitions, we found no difference in patterns of complex and simple emotions attributed to characters in the ingroup or outgroup. Nor did we find a difference when we isolated participants' race using our chi square test. These combined results allowed us to conclude that there was no evidence of infrahumanization illuminated by this study.

Furthermore, we continued the analysis to see if empathy or anti-social traits were related to the non-significant differences in complex emotions ascribed to either the in-group or the out-group. We found no evidence of any relationships between these factors.

There were several limitations to this study, not in the least of which was the definition of secondary or complex emotions. Given evidence from Demoulin et al. (2004), as well as an overwhelming lack of consensus in the psychological literature regarding the taxonomy of basic or simple emotions versus complex or secondary emotions, we struggled to define these categories. Psychological science has not yet created a conclusive theory of emotions, whether some are biologically based and some are not (as in Panskeep, 1998; Elkman, 1999), or all emotions are constructed from a mix of biological core affect and cognitive influence (as in Russell, 2003; Russell, 2009; Barrett, 2011), or if such a theory should have a more complex dimension such as the valence of cognitive input into an emotional reaction (as in Moors, 2013; Moors, 2014). In the end, we used two methods of emotional categorization – one of our own

devising and one present in much of the literature – neither of which had strong empirical evidence behind them.

The use of two definitions made this study particularly interesting. The usual structure of these studies, which utilizes pilot data, showed a pattern of infrahumanization, though it was not significant. There was no theoretical or *a priori* reason that this list would be more useful than the list of emotions chosen by the participants of the main experiment, though. When participants of the main experiment chose their own definitions of complex emotions, there was no discernable pattern of infrahumanization at all. This data is inconclusive on its own, but nonetheless suggests that there may be some pattern of infrahumanization which may come from a standard list of emotions, but which was not fully developed by the pilot.

It would be fruitful to use different theories of emotion – affect theory and constructionist theory, for example – to inform our analysis, much as we did with our two lists. This would allow us to directly compare these theories, so we may see which, if any, support emotional bias via infrahumanization. Since there is so much debate over which emotional theories are correct, it would be useful to see if they are able to detect a phenomenon such as infrahumanization. Instead of spending so much time looking for a definitive taxonomy of emotions, it would be useful to use an analysis like this to compare current contrasting theories.

In a related struggle, the language difference between those who originally proposed infrahumanization and the current authors created a profound barrier in this study. In the romance languages, there is a known cultural distinction between *emotion* (universal emotions) and *sentiments* (uniquely human emotions) (as in Leyens et al., 2000; Rohmann et al., 2009). In English, there is no such universal cultural divide. This makes it difficult to assess bias based on the humanness of an emotional appraisal, leaving infrahumanization much vaguer in this language.

Additionally, only two races were represented in the vignettes: black and white. We tried to mitigate this limitation by only using data for those participants who had in-group and out-group vignette characters to assess. As a result, 60 (39.2%) of participants were disqualified from the study. Had Hispanic, Asian or other races been included in the vignettes, more participants would have been eligible for analysis, possibly yielding different results. A secondary study in a population with similar diversity should use a greater range of vignettes, with characters of more races to test this proposed phenomenon.

There are still many questions remaining about infrahumanization and whether or not it may be exhibited as a trait. If participants were asked to read more vignettes, or were asked to pick more than five emotions for each vignette, a robust repeated-measures within-subjects analysis may be conducted. This study laid out the procedure for how this may work, but had too few vignettes and too little variance in the number of complex emotions chosen for each vignette character to analyze in this way. Such a study would have much more power, and would allow researchers to detect smaller effect sizes between individuals.

If a larger study was conducted and yielded results, it may also be able to detect a relationship between infrahumanization and empathy, as we also hypothesized. This may be a secondary study, or may be conducted as a second part of the same study, as we attempted.

Most importantly, this study tried to determine a direct pathway of measurement for infrahumanization. We tried to examine this phenomenon in different ways: through direct comparison of how individuals assessed those in the in-group and out-group, as well as via how this phenomenon interacted with empathy and other psychological traits. Although our results were null, we still find this to be important work. Infrahumanization has been observed in many between-subjects experiments, and it is still likely to be observable on an individual basis,

particularly in a repeated-measures within-subjects experiment. By taking our learnings from this study, we hope to inform the design for further research.

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